

REMARKS

The Office Action of June 14, 2007 has been received and carefully reviewed. It is submitted that, by this Amendment, all bases of rejection are traversed and overcome. Upon entry of this Amendment, claims 1-33 and 44-46 remain in the application. New claims 47 and 48 have been added in order to set forth additional specific embodiments that the Applicants regard as their invention. Support for these new claims may be found throughout the specification as filed, at least at page 6, line 17 through page 7, line 5. Reconsideration of the claims is respectfully requested.

Claims 1-34 and 44-46 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2003/0152797 to Darolia et al. (referred to hereinafter as "Darolia"). According to the Examiner, Darolia discloses a method of forming a thermal barrier coating (TBC) system by co-depositing first and second ceramic compositions. The Examiner further states that in one embodiment, a platinum-group metal may be co-deposited with the first and second ceramic compositions, or deposited before the TBC and subsequently diffused into the outer portion.

The Examiner admits that the reference remains silent on making a porous film. However, it is the Examiner's position that since Darolia teaches 1) co-depositing ceramic and metal, and 2) metal diffusion, the ability to make a porous film would be inherent to Darolia's process.

Applicants respectfully disagree with the Examiner's conclusions regarding Darolia. Applicants' invention as defined in the pending claims includes a mobile metal diffusing **to at least one of a cermet film surface and a ceramic film surface**, thereby rendering the porous film.

In sharp contrast, Darolia teaches that a platinum-group metal is present **within** the outer portion of the TBC. In one embodiment, Darolia teaches that the metal is co-deposited with a ceramic to form the outer portion (see paragraph [0025]). In another

embodiment, Darolia teaches that the metal is introduced into the outer portion via diffusion through the inner portion of the TBC and into the outer portion (see paragraph [0025]). In both of Darolia's methods, the metal results **in the outer portion, NOT on the outer portion.**

It is submitted that the teachings of Darolia do not render obvious the idea of diffusing the mobile metal *to the surface to form pores* within the film from which the metal is diffused. In fact, Applicants strongly disagree with the Examiner's conclusion that it would be inherent to form pores in the TBC of Darolia. The stated purpose of Darolia is to provide a barrier coating that is resistant to infiltration by CMAS and other potential high-temperature contaminants (see paragraph [0011]). Further, the second ceramic composition of Darolia is selected to increase the resistance of the outer portion of the TBC by interacting with molten CMAS to form a reaction product that resolidifies before it can fully infiltrate the TBC (see paragraph [0012]).

Applicants submit that complete diffusion of the metal to the surface to form pores within the TBC is **directly contrary** to the stated purpose of the TBC. If one skilled in the art were to form pores within the TBC, CMAS or other contaminants would be able to enter the pores and infiltrate the TBC. Infiltration of these contaminants would destroy the stated purpose of the system (which is to be resistant to such infiltration). In contrast to the Examiner's conclusion, Applicants submit that it would **not** be inherent to form pores in the TBC of Darolia.

Specifically regarding claims 4 and 23, Applicants submit that Darolia does not teach, suggest or render obvious the ceramic materials set forth in these claims. Darolia teaches that the base ceramic material is YSZ, nonstabilized zirconia, zirconia partially or fully stabilized by magnesia, ceria, scandia or other oxides (see paragraph [0022]). Darolia also teaches that the additional ceramic material is alumina, silica, scandia, calcium zirconate, spinels, magnesia, calcia, and chromia (see paragraphs [0022] and 0009]). Applicants' claims 4 and 23 recite different ceramic materials. As

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chemistry is an unpredictable art, it is submitted that the behavior of the ceramic materials (or metals contained therein) of Applicants' claims cannot be predicted by the materials disclosed in Darolia.

For all the reasons stated above, it is submitted that Applicants' invention as defined in independent claims 1, 21, 32 and 44, and in those claims depending ultimately therefrom, is not anticipated, taught or rendered obvious by Darolia, either alone or in combination, and patentably defines over the art of record.

In summary, claims 1-33 and 44-46 remain in the application. New claims 47 and 48 have been added herein. It is submitted that, through this Amendment, Applicants' invention as set forth in these claims is now in a condition suitable for allowance.

Further and favorable consideration is requested. If the Examiner believes it would expedite prosecution of the above-identified application, he is cordially invited to contact Applicants' Attorney at the below-listed telephone number.

Respectfully submitted,

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